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ABSTRACT

A study investigating the effects of "text linguists'" revisions on the comprehensibility of expository prose had as subjects 92 high school juniors who read original and revised versions of two passages from a high school history textbook. The revisions included changes regarding the given-new contract, schemata, reference, lexical cohesion, and cohesive conjunctions. The dependent measure consisted of the number of propositions included in the subjects' written free recall samples. Results indicated significant main effects for both topic (Cold War and Vietnam War) and version (original and revision), with subjects recalling the revised version and the Vietnam passages best. There was also a significant topic by version interaction, with the percentage of total propositions recalled greatest for the revised Vietnam passages. The results suggest that whole-discourse revisions should receive greater empirical and theoretical attention. (Author/MSE)

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Revising Expository Prose from the Perspective of Text Linguists: A Second Analysis and Assessment

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Abstract

The present study investigated the effects of "text linguists'" revisions on the comprehensibility of expository prose. Each of the experimental subjects for the study, 92 juniors from a public high school in northern Arizona, read original and revised versions of 2 different passages from a high school history textbook. The 2 revised versions were generated by further revising the revsions used in a previous study by Roen and Grunloh (1984). These third-generation versions included changes regarding the given-new contract, schemata, reference, lexical cohesion, cohesive conjunctions. The dependent measure consisted of the number of propositions included in subjects' written free recall protocols. Results indicated significant main effects for both topic (Cold War, Vietnam War) and version (original, revision). Further, there was a significant topic by version interaction. Specifically, the percentage of total propositions recalled was greater for the Vietnam passages than for the Cold War passages. Subjects recalled the revised passages better than the original ones. And revision exerted the greater effect on the Vietnam passage. Results suggest that whole-discourse revisions need to receive greater empirical and theoretical attention.

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Revising Expository Prose from the Perspective of Text Linguists: A Second Analysis and Assessment

Text linguistics, in its early stages, looked primarily at the distribution of syntactic features. Among those who first addressed the need to describe formal features of texts was Zellig Harris (1952), who, under the rubric of "discourse analysis," outlined a system of analysis in which the distribution or combination of equivalent or identical elements across sentences could be described. In addition to syntactic features, though, Harris also considered interdependent semantic features, to which he assigned the term "cross reference" (p. 15).

Since Harris' (1952) early efforts to analyze texts, interest in texts and in discourse has been growing steadily, and, as Rieser (1978) has noted, much of that interest has been focused on discourse coherence--a focus advocated by Bierwisch (1965) nearly two decades ago. Among those who have examined coherence, is Harweg (1968), who used structural methods to examine discourse coherence as a product of the occurrence of co-referential nominal elements. Later, van Dijk (1972) considered discourse coherence within the framework of generative semantics, analyzing coherence as a product of micro- and macro-level connections within texts. Petofi (1973) suggested that discourse coherence may be examined by considering a variety of textual features, including the recurrence of items, topic-comment order,

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and the "order of logical and temporal 'antecedent(s)-consequence" (p. 217). This emphasis on discourse coherence, according to Kummer (1972), should remain the primary criterion for evaluating text grammars.

Perhaps one of the most interesting, thought-provoking, and controversial developments in the system of text linguistics originally outlined by Harris is that of Halliday and Hasan (), who developed a thorough description of micro-level cohesive elements that commonly occur in texts. Halliday and Hasan have treated cohesion as a semantic relationship between a presupposing and a presupposed element, which create a cohesive tie within a text. Such sets of elements, which need not occur within the same sentence or within adjacent sentences in a text, may be words, phrases, or even whole clauses.

According to Halliday and Hasan's elaborate taxonomy, cohesion may occur in five forms: reference, substitution, ellipsis, lexical cohesion, and conjunction. In reference, a word's interpretation depends on some other item to which it refers. In substitution, one linguistic item replaces another. Ellipsis may be viewed as the omission of an item from a text, but its cohesive properties become more apparent if it is considered as a form of substitution in which an item is replaced by the null set, by nothing. That is, something is left unsaid, but it is understood. Lexical cohesion involves the reiteration of an item, which may occur as an exact copy or as a synonym, near synonym or superordinate term. Unlike the four types of cohesive devices already mentioned, which involve some sort of

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search of a preceding or forthcoming segment of text, the fifth device, conjunction, is simply a semantic relation in which the conjunctive element specifies how the immediately forthcoming segment of text is systematically connected to the immediately preceding segment.

Another method of examining coherence in discourse was described by Chafe (1970), who noted that declarative sentences contain given or old information, as well as new information. As Clark and Haviland (1977) have explained, there exists between a speaker and listener or between a writer and reader a "given-new contract" in which "the speaker tries, to the best of his ability, to make the structure of his utterances congruent with his knowledge of the listener's mental world. He agrees to convey information he thinks the listener already knows as given information and to convey information he thinks the listener doesn't yet know as new information" (p. 4). Normally, given information appears before new information, and that makes it easy for a reader or listener to find the antecedent for new information. If the opposite occurs, though--if new information appears first--the listener or reader may have difficulty in holding the new information in short-term memory long enough for the antecedent to appear.

Theorists have viewed the relationship between micro-level features of texts and discourse coherence from several perspectives. The first attempts to explain this relationship as part of a bottom-up discourse processing model. In this model, coherence is the product of micro-level (local) features of a

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text. As a reader processes a text, he/she combines that textual information to form a macrostructure--a global interpretation or gist for the text. While there probably are no strictly bottom-up processing supporters in the theoretical community, there are some theoreticians who attribute great powers to micro-level text features. Lyons (1977), for example, claims that cohesive conjunctions--he calls them "connectives"--are crucial in helping readers establish semantic relations between textual propositions. Nelson and Stalter (1978) consider such devices equally essential.

The second perspective from which theorists have viewed the relationship between textual cohesion (countable ties within a text) and discourse coherence attempts to explain that relationship as part of top-down processing models. Within such models local textual cohesion plays a lesser role in the development or construction of discourse coherence. The contributions of micro-level cohesive devices are modified and integrated by the reader's hypotheses about the text's macrostructure; these hypotheses are in turn modified by the reader's prior knowledge of the world, including knowledge about the structure and organization of texts. In this model, readers' text processing frames (Charniak, 1975; Minsky, 1975; Petofi, 1976; Scragg, 1976; Winograd, 1975) or schemata (Kintsch & van Dijk, 1978; Rumelhart & Ortony, 1977; Thorndyke, 1977) will be activated before encountering a text or, at least, early in the text-reader interaction, the discourse. As a reader processes a text, his/her textual frames are activated and then modified and

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adapted to fit the text under consideration.

Additionally, the reader's construction of the macrostructure of a text will be influenced by the purpose for reading the text (to recall as much of the text as possible, for example). The purpose will help to activate plans, or goal-directed schemata (de Beaugrande, 1980; Schank & Abelson, 1977) to assist the reader in determining rather early in the process how the macrostructure might be constructed.

A number of studies have examined the effects of individual textual variables or small sets of such variables. Among those who have tested rhetorical predicates, for example, are Horowitz, Piche, and Samuels (1980); Meyer (1975, 1977); Meyer, Brandt, and Bluth (1978); and Meyer, Freedle, and Walker (1977). Among those who have tested the types of cohesive devices described by Halliday and Hasan (1975) are Hagerup-Neilsen (1977), Irwin (1978), Moberly (1978), Roen (1984), Roen and Piché (1984), and Stone (1979). Results of these and other studies manipulating discrete variables have been mixed, and they have raised far more questions than they have answered.

It is in the context of the aforementioned studies that the present study attempted to test the effects of text linguists' efforts to construct more comprehensible texts.

Method

Subjects

Subjects for the present study were 92 juniors enrolled in

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regular-track sections of English courses at a high school in northern Arizona.

Stimulus Materials

Materials for the study included 4 passage versions and directions for reading the passage versions. The passage versions varied along two dimensions. First, they dealt with two topics: 1) President Eisenhower's diplomatic intervention in Cold War Asia between 1952 and 1954, 2) American responses to Communists in South Vietnam. Second, two of the passage versions were intact excerpts from a senior high school American history text (Wade, Wilder & Wade, 1972). The other two versions were the investigators' revisions of the original excerpts.

The "text linguists' revisions" consisted of a variety of textual manipulations. Unless it was impossible to do so in a particular context, the investigators attempted not to add information to a text or delete information from a text. This procedure was followed, of course, to assure that subjects would not be recalling different information. For the most part, the investigators were able to produce revised versions with approximately the same number of propositions as the original versions. However, the revised Cold War version had 17 more propositions than the original (152 versus 135), and the revised Vietnam version had 6 fewer propositions than its original (121 versus 127). Several of these additional propositions were instances of exophora or exophoric reference (Halliday & Hasan, 1976), designed to establish the context for the text. That is,

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those propositions helped to set the text within the world that exists outside the text.

In addition to strengthening textual ties to the outside world, some revisions to the passages were designed to strengthen endophoric ties--ties within the text. In some cases, the investigators added cohesive conjunctions to help signal the type of semantic relationship existing between adjacent sentences or adjacent paragraphs.

Some revisions to the passages resulted in several types of lexical ties. In particular, several changes resulted in ties created by the reiteration of an element: exact repetitions, synonyms or near synonyms, and superordinate terms. A few of the revisions resulting in lexical cohesive ties were created through the use of collocation. That is, several revisions employed the use of terms that frequently co-occur.

Several revisions were designed to make the texts conform to the given-new contract (Clark & Haviland, 1977). That is, those changes were designed to create a text in which old or given ideas appeared before new ones. New ideas, when they did appear in the text were tied in some way to ideas that had been introduced earlier in the text.

Additionally, a response (or problem-solution) rhetorical predicate (Meyer, 1975) was added to the Cold War passage. This was done to provide readers with a label for the relationships among ideas within the text. In the revised version of the Cold War passage, Communist military aggression was labeled the problem; Eisenhower's proposals were labeled as proposed

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solutions.

Further, some revisions were designed to make the order of ideas in the texts correspond to the chronological order of events in the world. These changes, of course, were intended to accommodate the schemata that readers brought to the texts.

Finally, some of the revisions were designed to place relatively important ideas in appropriate textual positions.

I wish to make it clear that the passages used in the current study were second-generation revisions of first-generation revisions used in an earlier study by Roen and Grunloh (1984). The additional generation was made necessary because the first revisions had resulted in small, nonsignificant gains in comprehension.

Procedures

Each of the 92 subjects read all four of the passage versions described above. On the first day that data were gathered, each subject read two of the four passage versions, an original of one topic and a revision of the other. On the following day each subject then read the alternate versions--that is, the two versions not read on the first day. The order in which subjects read the four versions was counterbalanced, with each subject assigned randomly to 1 of the 4 possible orders.

The investigators gathered data in regularly scheduled English classes, each 50 minutes long. On each of the two consecutive days that data were gathered the procedures were the same. First, at the beginning of each session, each subject

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received a test packet. Second, the investigators read directions aloud as subjects read along silently. Third, each subject read one stimulus passage and then wrote a free recall protocol of that passage on three sheets of lined composition paper attached to the passage. Finally, each subject read a second passage and wrote a free recall protocol of it.

Design and Analysis

The study employed a repeated measures design with two trial factors: topic (Cold War, Vietnam War) and version (original, revision).

Written free recall data were subjected to a 2 X 2 repeated measures analysis of variance with two trial factors.

Scoring

The written free recall protocols were subjected to an analysis of the number of idea units recalled. Two graduate students in linguistics generated propositions for each passage version. They employed a modification of Meyer's (1975) procedures in which each text is segmented into propositions in the order in which they occur in the text. Each proposition is further divided into its predicate and arguments. Unlike the original Meyer system, the modified system does not include hierarchical levels or role relationships. For a proposition to be counted in the analysis of the recall protocols, it had to be recalled verbatim or in a recognizable paraphrase. Further, the semantic context for the proposition in the recall protocol had to substantiate its original location in the experimental passage

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read.

The percentages of initial agreement between raters on the propositional analysis of each passage were as follows: 91% for the Cold War original, 95% for the Cold War revision, 89% for the Vietnam original, and 92% for the Vietnam revision. For scoring the protocols, the two raters scored 20 randomly assigned recall protocols in common to provide an estimate of interrater reliability. The Pearson Product-Moment correlation coefficient between raters was .90, significant at the .001 level.

Because each of the 4 passage versions had a different number of propositions in its content structure (Cold War original = 135, Cold War revision = 152, Vietnam original = 127, Vietnam revision = 121), percentages of total propositions recalled were computed to equate recall for the four passages.

Results

In the first ANOVA, the percentage of propositions recalled was based on a separate number of proposition possible for each of the 4 passage versions. Results for this ANOVA indicated that there was a significant main effect for topic, F (1,91) = 79.85, p = .0000. That is, subjects who read the 2 Cold War passages recalled a mean of 35.3% of the propositions in the texts while subjects who read Vietnam passages recalled a mean of 37.9% of the propositions. (Standard deviations for the 4 means ranged fro a low of .149 to a high of .163). The main effect for the other factor, version, was also significant, F (1,91) = 123.60, p = .0000. That is, while subjects reading original versions recalled

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33.3% of the propositions in the texts, subjects reading revised versions recalled 39.9% of the propositions. The topic X version interaction was also significant, F (1,91) = 19.06, p = .0000. That is, while there was a difference of 5.2% favoring the Cold War revision (M = .379) over the Cold War original (M = .327), there was a larger difference of 8.2% favoring the Vietnam revision (M = .420) over the Vietnam original (M = .338). For the second ANOVA, 25 randomly selected recall protocols for original and revised versions were matched against propositional grids for the original versions. That is, the propositional grids for the revised versions were not used in the scoring. Results of this ANOVA indicated no significant main effect for topic, F (1,24) = 1.20, p = .2841. There was, however, a highly significant main effect for version, F (1,24) = 43.60, p = .0000. The mean recall for original versions was 32.7%, and it was 36.9% for revised versions. (Standard deviations for the 4 means ranged from a low of .157 to a high of .162.) The topic X version interaction was not significant, F (1,24) = 2.99, p = .0967.

Discussion

The revised versions of the passages under consideration represent an effort to produce what Armbruster and Anderson (1984) have called "considerate" text--text that "facilitates understanding, learning, and remembering" (p. 2). Because "considerate" texts include a relatively wide range of factors, our effort attempted to incorporate into a single shot those factors that seem important to the production of coherent

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discourse. In our efforts, we attempted to do what Beck, McKeown, Omanson, and Pople (1984) did when they revised stories to improve coherence--and susequently comprehension: We worked at "making connections within the text more apparent, filling in potential knowledge gaps, and organizing and clarifying text events and states" (p.274).

At the local level, we worked to create the types of cohesive ties that Halliday and Hasan (1976) have described in such detail. That is, we used reference, ellipsis, lexical cohesion, and cohesive conjunctions to tie adjacent and non-adjacent sentences together.

We also attempted to make certain that the ideas in those sentences flowed in a theoretically sound manner. We attempted to create texts that adhered to the given-new contract (Chafe, 1970; Clark & Haviland, 1977) so that readers could more easily attach new information in the text to information that had already been given in the text.

Further, we attempted to move chunks of information around so that information that contributed to the unity of the text could do so. Conversely, we attempted to move information that detracted from the unity of the text to unassuming positions. That is, we tried to hide less relevant information.

We prefer to consider the results of the present study in light of what George Dillon (1981) says about reading: "...reading involves the construction (or reconstruction) of the text read. The meaning of the text is not on the page to be extracted by readers; rather, it is what results when they

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engage...texts for whatever purposes they may have and with whatever knowledge, values, and preoccupations they bring to it. Thus the written marks on the page more resemble a musical score [emphasis ours] than a computer program; they are marks cuing or prompting anenactment or realization by the reader rather than a code requiring deciphering" (p. xi). In particular, we would like to view our revisions of the original passages as masterfully composed musical scores, engaging our readers in the way that, for example, the Fourth Movement of Beethoven's Ninth Symphony engages members of the Minnesota Orchestra.

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